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# **The Turkish Liquidity Crisis of 2000: What Went Wrong... \***

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## **Abstract**

Almost 12 months after the launching of the three-year stabilization program backed by the International Monetary Fund, Turkey experienced an acute liquidity crisis that threatened the viability of the disinflation and the fiscal adjustment program. The paper is an attempt at providing answers to the question 'could the liquidity crisis have been avoided?', without resorting to the lack of unfavorable external conditions during 2000, such as the rise in the oil prices and the U.S. federal funds rate as well as the unfavorable change in the US\$/Euro parity. Three factors that are argued to have contributed to the creation of the 2000 liquidity crisis are: 1- Inability of the Turkish government in maintaining the stream of good news and sustaining capital inflows; 2- Lack of enough backing of the program by the IMF in terms of providing sufficient insurance against exchange rate risk. 3- Existence of the "no sterilization" rule in the letter of intent, which was argued to be a 'design flaw' in the program since it led to interest rate undershooting initially. These factors coupled with the fragile structure of the banking system helped bring about the events that led to the following crisis at the end of February 2001.

## **1. Introduction**

Almost 12 months after the launching of the three-year stabilization program backed by the International Monetary Fund (IMF), Turkey experienced an acute liquidity crisis that threatened the viability of this disinflation and the fiscal adjustment program. During the November 20-December 5 2000 period only, US\$6.4 billion net foreign exchange outflow took place and the overnight inter-bank interest rates soared to 1,700% on December 1. The IMF then stepped in and announced a US\$10 billion financial package on December 6, boosting the foreign exchange reserves of the central bank to avoid a possible speculative attack followed by a balance of payments crisis. As a result of this liquidity crisis, higher interest rates, lower growth rate and lower primary fiscal surplus are expected to prevail in 2001 when compared to the values in 2000.

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The letter of intent<sup>2</sup> of December 9, 1999, requested a three-year stand-by arrangement with the IMF amounting to US\$4.0 billion and outlined in detail measures that will be taken by the Turkish government for combating the chronic inflation that has been afflicting Turkey in the past 25 years. It is important to note that 16 IMF agreements preceded this stabilization program since 1961, some of which have failed<sup>3</sup>, and that Turkey is not the only country that has experienced failed stabilization attempts. In the last four decades, countries with the chronic inflation problem have undertaken repeated stabilization attempts and most of these attempts have resulted in balance of payments crises, loss of international reserves and costly devaluations (see Alesina and Drazen, 1991, Calvo and Vegh, 1998; and Paldam, 1994).

However, it will be a gross mistake to conclude that ‘unsuccessful stabilization attempts’ were the only source of the recent episodes of crises in the international financial markets. With the financial liberalization measures taken up by the emerging market economies at the hopes of acquiring cheaper capital and the growth in the magnitude of aggregate private capital flows to these economies<sup>4</sup>, the frequency of currency and financial crises, and their detrimental impact on the stability of the world economy has increased. The volatile nature of the private capital flows has proved macroeconomic and financial management a difficult task. The contagious nature of the episodes of emerging market crises (the ‘Tequila Effect’ of the Mexican Peso crisis of December 1994, the ‘Asian Flu’ of 1997 and the ‘Russian Virus’ of 1998) have fostered research to determine the factors that cause these crises (see for example: Calvo, Leiderman and Reinhart, 1996; Calvo, 1998; Corsetti, Pesenti and Roubini, 1999; Dornbusch, 1998; and Kaminsky and Reinhart, 1999).

Following every crisis, a soul-searching effort is made to avoid such disasters occurring again; the liquidity crisis of Turkey in 2000 was no exception. Some economists blamed the liquidity crisis on the unfavorable conditions in the world economy in 2000. Three important adverse external developments for the stabilization program were, the rise of the interest rates in the United States by 100 basis points, the increase in the international energy prices and finally the loss in the relative strength of the Euro vis-à-vis the US\$. These issues will be discussed later. Some other economists blamed the set-up of the disinflation program and argued that a currency board could have saved the IMF having to bail Turkey out (Hanke, 2000). Yet others blamed the Turkish government for delaying some of the items under the privatization program<sup>5</sup>. The purpose of this paper is to discuss the important issues surrounding the liquidity crisis in Turkey. Special emphasis is given to the stabilization program and a quest is made to find out whether there were inherent transmission mechanisms in the program that would lead to the liquidity

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<sup>2</sup> The letter of Intent is available at <http://www.imf.org/external/np/loi/1999/120999.htm> in its entirety.

<sup>3</sup> Of these 16 stabilization programs, 4 can be classified as failures and 6 as successes by comparing the quantity of SDR initially planned for support and the actual amount dispersed.

<sup>4</sup> See for example, the IMF’s International Capital Markets Report, September 2000 (available at <http://www.imf.org/external/pubs/ft/icm/2000/01/eng/index.htm>) and the Joint BIS-IMF-OECD-World Bank statistics on external debt (available at <http://www.oecd.org/dac/debt/>)

<sup>5</sup> There were also “conspiracy theories”, blaming some foreign and domestic large banks for causing the outbreak of the crisis by shutting down their credit lines to banks with large short-term financing needs. The focal point of this paper, however, is to come up with consistent explanations for the existence of the “large” short-term financing needs.

crisis. It is argued that the three important factors that have caused the liquidity crisis in 2000 are: 1- Unsuccessful government policies in maintaining the stream of good news and sustaining capital inflows; 2- Not enough backing of the program by the IMF in terms of providing enough insurance against exchange rate risk. 3- The 'no sterilization' rule, which may be a 'design flaw' in the program, since it led to interest rate undershooting initially. These factors coupled with the fragile banking system structure (see Alper et al., 2001) and the unfavorable external conditions led to the crisis.

The plan of this paper is as follows. Section 2 briefly summarizes the measures of the three-year-stabilization program with minimal focus on the fiscal policy. Special attention will be devoted to the monetary policy and the exchange rate as well as the important developments that led to the crisis. Section 3 discusses the traditional channels of stabilization attempts that would lead to balance of payments crises and proposes channels inherent in the program. Section 4 concludes.

## **2. The Disinflation Program and the Main Economic Developments in 2000**

The three-year disinflation program is essentially an exchange rate-based stabilization program supplemented by fiscal adjustment and structural reform and is supported by the IMF with approximately US\$4.0 billion over these three years. The support from the IMF is conditioned on achieving certain target values on some quantitative variables called the performance criteria. The performance criteria concerning the fiscal adjustment were aimed at establishing fiscal discipline and involve floor values on the primary surplus of the government sector<sup>6</sup> and privatization proceeds as well as ceiling values on the contracting or guaranteeing of new external public debt and the stock of public short-term external debt. There were also indicative targets focusing on the overall balance of the consolidated government sector. The stabilization program also included structural reform measures involving agricultural reform, pension reform, fiscal measurement and transparency, and tax policy and tax administration. Wage and price controls by the public sector to guide the private sector were also included as elements of incomes policy.

Monetary and exchange rate measures were aimed to be transparent. Using an exchange rate anchor for achieving the year-on-year CPI inflation target of value of 25% (down from the previous year's value of 68%) was essential, given the high level of dollarization and the history of exchange rate-based setting of inflationary expectations. Compared to previously implemented exchange rate-based stabilization programs, Turkey's disinflation program had a pre-announced exit strategy. This strategy was aimed at establishing credibility for the announced reduction in the devaluation rate and to avoid ill effects associated with programs that incorporate a reduction in the devaluation rate that is not credible.<sup>7</sup> Following the first 18 months of the program with a

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<sup>6</sup> The government sector comprises of the consolidated budget, four key Extra-budgetary funds, eight State Economic Enterprises, the unemployment insurance fund and three social security institutions excluding privatization receipts.

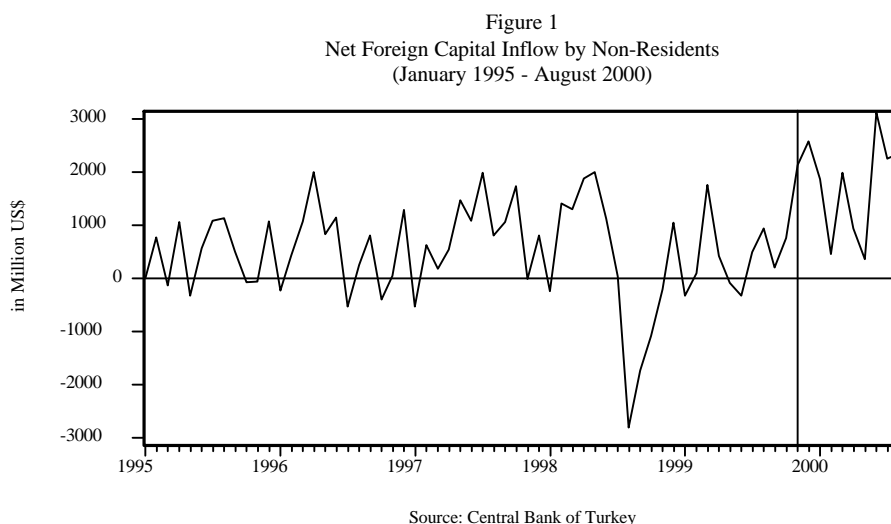
<sup>7</sup> Vegh (1992) analyzes the ill effects of the incredible exchange rate-based stabilization programs in which the public expects the higher rate of devaluation to resume at some point in the future. Such programs imply a boom at the outset of the program and a recession later on.

pre-announced exchange rate path, a progressively widening band around the path would be introduced, aimed at achieving a smooth transition to flexible exchange rate system.

The monetary and the exchange rate program involved floor values on the net international reserves of the central bank and ceiling values on the net domestic assets as performance criteria. Within each quarter, net domestic assets were allowed to fluctuate within a 5% band of the previous quarter's value of the stock of total base money but end quarter values were predetermined. Putting all these together and making a note that capital flows will not be sterilized<sup>8</sup> lead to a completely endogenously determined money supply. In this "quasi-currency board" setup, the daily liquidity requirements of the financial system will not be a priority and the liquidity in the economy is basically determined by the "support of the international community" as well as the existence of "good climate in other emerging markets".

Main economic developments, which resulted in a liquidity crisis at the end of November 2000, may be summarized as follows.

At the beginning of November 1999, Moody's changed the outlook of Turkey to positive. There were two major reasons for this "initial optimism": First, the expectation of stabilization program and second, the expectations of improvements in the Turkey-European Union relations. The first week of December confirmed these two events as on December 9, Turkey signed the letter of intent with the IMF and on December 10-11 at the Helsinki summit, Turkey is named as an official member considered for the enlargement of the European Union. Figure 1 shows the initial international support for the program by plotting the net foreign capital inflow by non-residents<sup>9</sup> starting in 1995 through August 2000. The vertical line denotes the signing of the letter of intent.



<sup>8</sup> Article number 33 of the letter of intent.

<sup>9</sup> The net foreign capital inflow is obtained through summing net foreign FDI flows by non residents, net portfolio investments by the foreign residents, net short-term capital inflows by the foreign residents and the long-term capital flows.

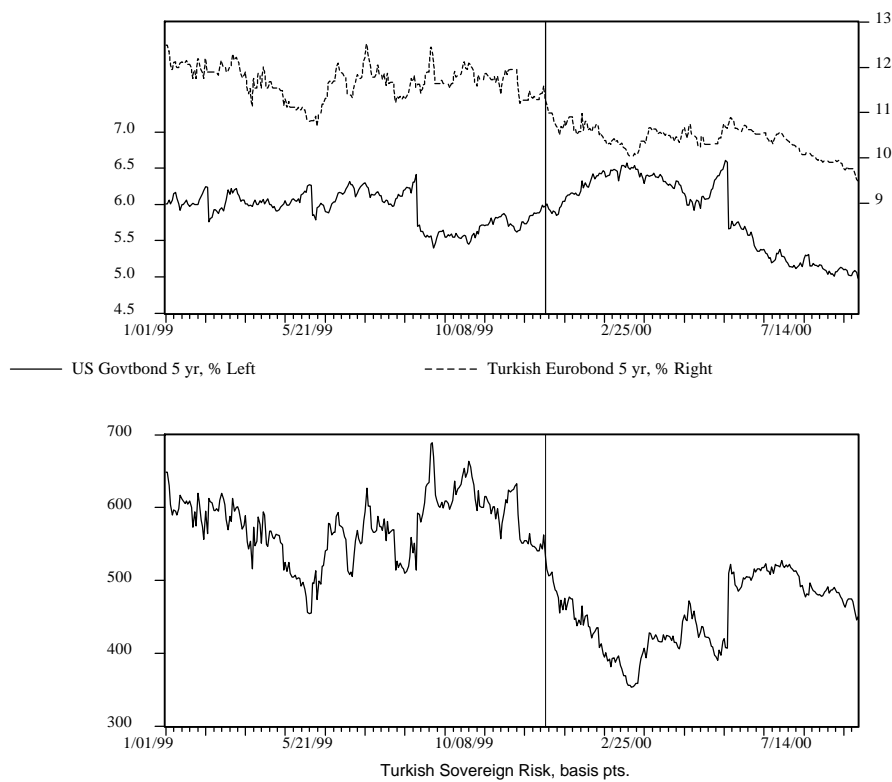
A proper account of the initial capital inflow can be given as follows. In equilibrium, the expected return on Turkish government securities in Turkey can be shown to equal the risk free rate (such as the U.S. government security with the same maturity) plus the risk premium:

$$\begin{array}{lcl} \text{Expected return of} & & \text{Expected return of} \\ \text{investing in Turkey} = & & \text{investing domestically} + \text{Risk premium} \end{array}$$

It is worthwhile to decompose the risk premium into the sovereign risk and the exchange rate risk:

$$\text{Risk premium} = \text{Sovereign risk (default risk)} + \text{Exchange rate risk}$$

Figure 2  
Returns and Spread on 2005 Bonds  
(Turkish Eurobond - US Government Bond)  
January 1999 - August 2000

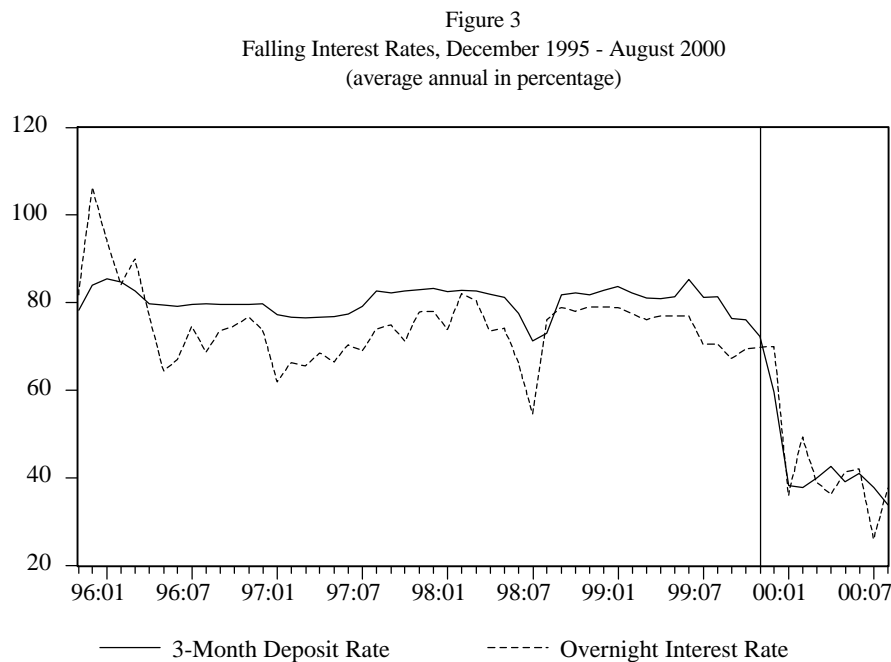


The disinflation program eliminated the exchange rate risk since a pre-specified path of 18 months for the exchange rate vis-à-vis the basket was announced. Through the aforementioned fiscal policy measures and the structural reform measures, the default risk was also reduced. These provided an arbitrage opportunity for the foreign investors at the ongoing market interest rates since the expected return now exceeded the risk-free return and the default risk. And hence the capital inflow took place.

One should analyze the capital inflow and the reduction in the sovereign risk and the exchange rate risk simultaneously. Figure 2 shows the time line of the sovereign risk obtained by the difference in the yields of 5-year Turkish Eurobond and 5-year U.S. government security. As the return on the Turkish Eurobond is in US\$, the actual reduction in the risk premium with the disinflation program is underestimated since the reduction in the exchange rate risk is not shown.

As the capital inflow continues, since the monetary and exchange rate policy of the disinflation program<sup>10</sup> rules out any sterilization effects, money market liquidity increases, interest rates go down, shifting the yield curve downwards, lowering the future burden of the interest payments on the debt stock and thus lowering the default risk, prompting further capital inflows. Hence the interest rate undershoots.

Figure 3 shows the path of the interest rates at the initial months of the disinflation program:

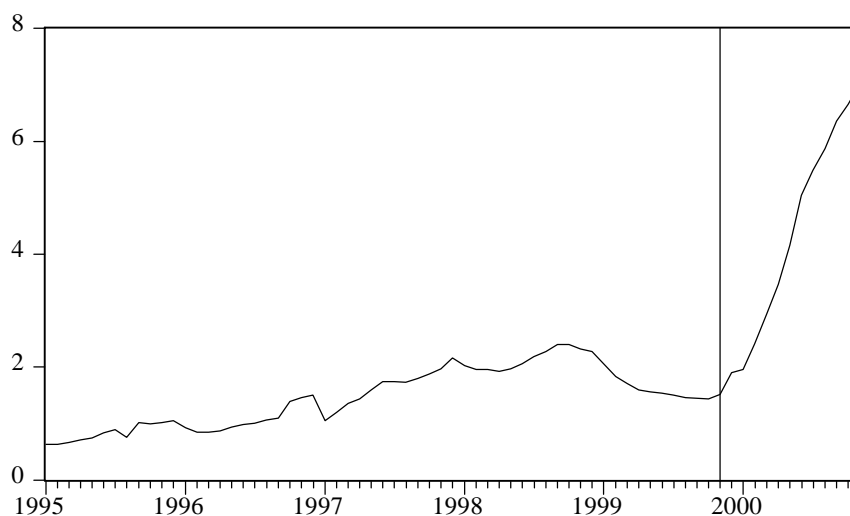


Source: Central Bank of Turkey

<sup>10</sup> As mentioned previously, the central bank works as a 'quasi-currency board' under the monetary and the exchange rate policy of the disinflation program.

One other factor causing the rapid decline and the “undershooting” of the interest rates is the aggressive positioning of some banks in expectations of falling interest rates. Endowed with such expectations, these banks purchased “excessive amounts” of government securities, causing the auction price of the government securities to climb further, and hence the interest rates to go down. They also offered larger volumes of fixed rate consumer credits. Such banks depended almost exclusively on repo<sup>11</sup> funding and interbank loans for short-term financing. In a falling interest rate environment, such a strategic behavior creates a capital gain. However, a bank purchasing government securities and engaging repo funding for short-term financing needs, bears the maturity mismatch risk since 99% of the volume of transactions in the repo market consists of repos with maturity 1 day whereas the underlying government securities’ average maturity is approximately 15 months<sup>12</sup>. Such aggressive positioning led to a boom in consumer lending as well as the undershooting of the interest rates on government securities in the first 12 months of the disinflation program.

Figure 4  
Consumer Credit Stock of Deposit Money Banks  
January 1995 - November 2000 (in Billion US\$)



Source: Central Bank of Turkey

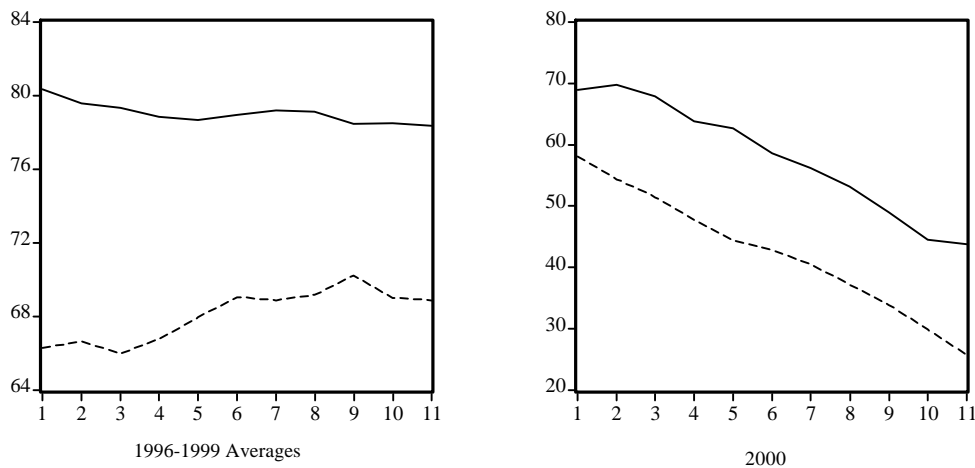
<sup>11</sup> A repurchase agreement is a simultaneous arrangement to sell marketable securities to customers and to repurchase them later at a specified day in return of cash bearing daily interest.

<sup>12</sup> As stated in article #20, Turkey Letter of Intent, December 18, 2000. The 2000 letter of intent is available at <http://www.imf.org/external/np/loi/2000/tur/03/index.htm>.



The reduction in the interest rates and the increase in the availability of credits led to increases in consumption and investment, leading to an increase in the growth of the economy. Even though the “higher than expected growth rate”<sup>13</sup> affects the tax revenues positively, its effects on the current account balance have not been helpful to the performance criterion on the net international reserves. Projected to be 1.5-2% of GNP initially, the current account deficit is estimated to reach approximately 4.5-5.5% of GDP.<sup>14</sup> Figures 5 and 6 depict main developments in the first eleven months of the program concerning balance of payments.

Figure 5  
Inflation and the Basket Exchange Rate Appreciation Rates  
Annual Percentage Change  
— Inflation -- Basket Rate Appreciation



Source: Central Bank of Turkey

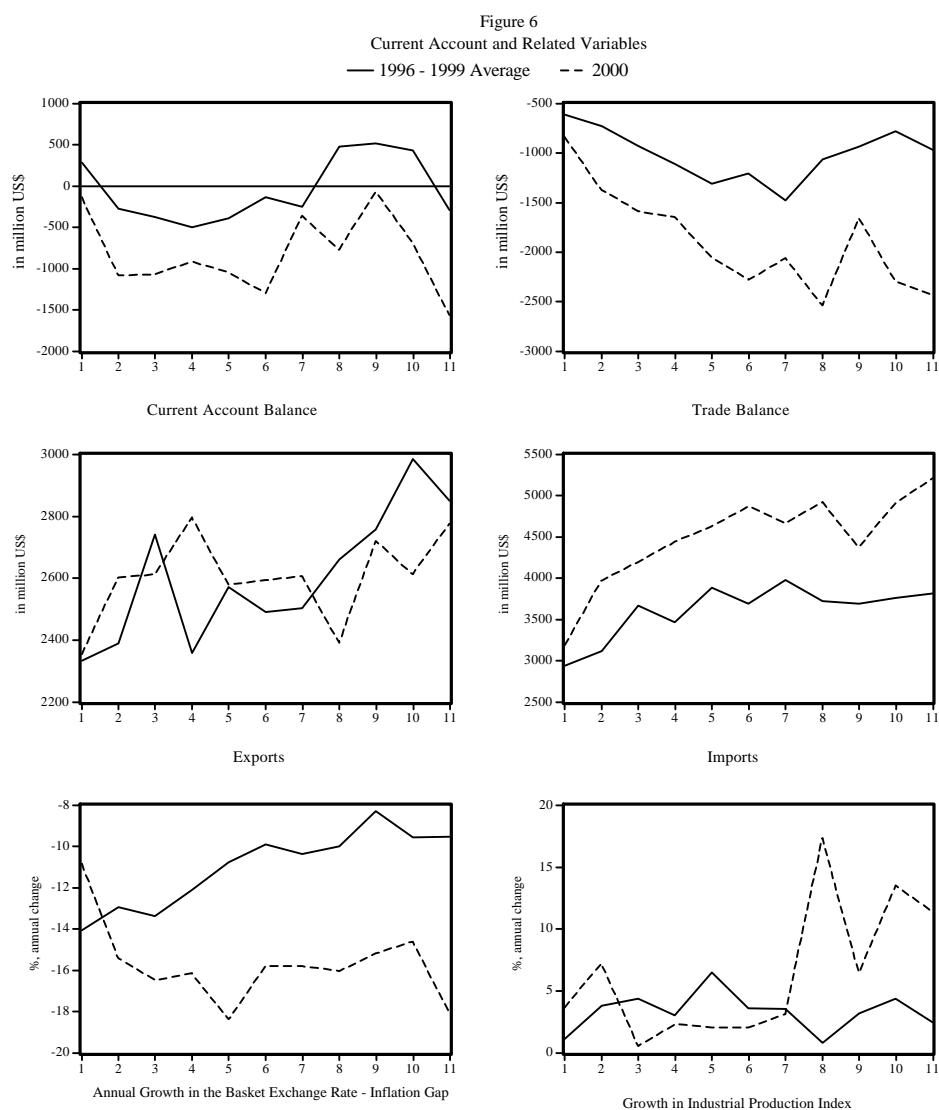
Figure 5 shows relative changes in the annual inflation rate and the percentage change in the basket exchange rate<sup>15</sup> for the first eleven months during 1996-1999 and in 2000. Two things are evident from Figure 5: first, that the percentage change of the basket exchange rate has remained behind the inflation rate during the 1996-1999 period; and second, the reduction in the inflation rate has lagged behind the depreciation of the basket rate during the implementation of the

<sup>13</sup> Coming out of a 5% contraction of real GDP, the disinflation program projected the 2000 real growth in the range of 5-5.5%. The latest revised estimates of the real output growth stands at 6.8-7.3%.

<sup>14</sup> According to the latest released figures, as of December year-to-date current account deficit reached US\$9.8 billion whereas the trade deficit stood at US\$22.3 billion, approximately.

<sup>15</sup> The basket exchange rate used in the paper comprises of the US Dollar and the German Mark with weights 0.33 and 0.66, respectively. The basket definition used in the stabilization program was different as it consisted of the US Dollar and the Euro with weights 0.56 and 0.44, respectively. In the paper, the former basket definition was used since data on Euro before 1999 is not available.

stabilization program in the first eleven months of 2000. The latter point can be discerned more clearly in Figure 6.



Source: Central Bank of Turkey

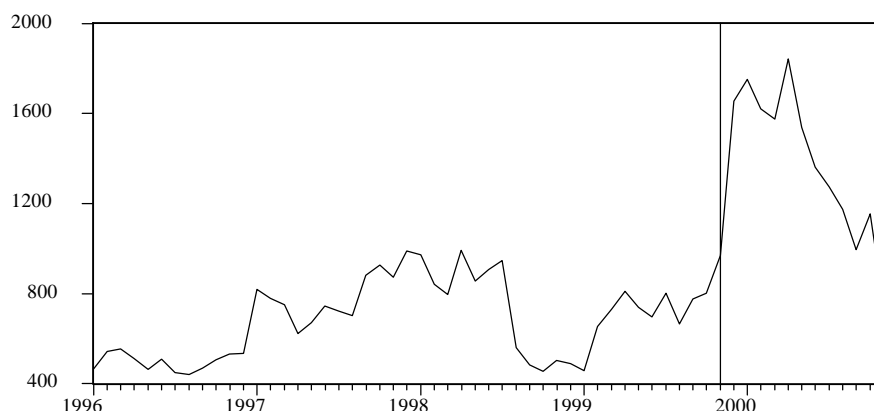
Figure 6 depicts current account balance and related variables in the first eleven months of 2000 compared to the 1996-1999 averages. Compared to the first eleven months in 1996-1999 when the average current account balance recorded a deficit of US\$0.49 billion and a trade deficit of US\$11.1 billion, during the first eleven months in 2000 the current account balance showed a deficit of US\$8.98 billion and a trade deficit of US\$20.8 billion.

The drastic deterioration of the trade deficit is mostly due to the increase in the imports of goods and services rather than a decline in exports. The eleven month-cumulative export figures stood at US\$ 28.6 billion during 1996-1999 and in 2000, whereas for imports, the 1996-1999 eleven month cumulative average was US\$39.7 billion and the same figure in 2000 stood at US\$49.4 billion. Based on previous exchange rate-based stabilization episodes, Vegh (1992) argues the initial increases in real activity, real appreciation of the domestic currency and deterioration of the trade and current account balance as being the main empirical regularities associated with the stabilization programs.

Next, causes of the deterioration of the trade account balance are inquired. The bottom two plots show main developments in the nominal basket exchange rate growth and the inflation rate as well as the increase in the real activity as evidenced by the annual growth in the industrial production index. It is true that the convergence of the inflation to the exchange rate anchor is slow as evidenced by the widening of the gap, however, the effect of this “real appreciation” is minimal on the exports. So even though the real appreciation of the exchange rate may be instrumental, especially five months after the start of the program, it cannot be the determining factor for the initial jump in imports. The increase in the real economic activity also follows with a lag of seven months. Similarly, the initial increase in imports cannot be accounted for by the increase in the imports of intermediate goods as a result of the increase in real activity. Figures 3 and 4 account for the deterioration of the trade balance due to rise in imports. The reduction in the nominal and real interest rates reduced the return to savings, causing the delayed consumption to pickup immediately, raising the consumption of traded goods. Also, previously observed commercial bank profitability due to holding government securities went down, causing banks to switch to offer alternative loans such as consumer credits.

On the financial side, due to delays in privatization announcements as well as postponement of regulatory measures of the banking sector, the initial optimism has worn out. The amount of net capital inflow, which recorded US\$ 11.1 billion in the first nine months of 2000, turned to an outflow in September resulting in a decline in the net international reserves of the central bank by US\$0.025 billion. Istanbul Stock Market Index lost approximately 30% in value from November to December 15. The ISE-100 Index went down to the lowest level recorded since March 1999 (see Figure 7).

Figure 7  
Istanbul Stock Exchange 100 Index  
January 1996 - November 2000  
(US\$, 1986=100)



Source: Istanbul Stock Exchange

On the privatization front, sales of shares of Turk Telekom (33.5%) and the Turkish Airlines (51%) have been postponed. Instead of the privatization receipt target value of US\$7.5 billion only US\$3.5 billion<sup>16</sup> was realized throughout 2000.

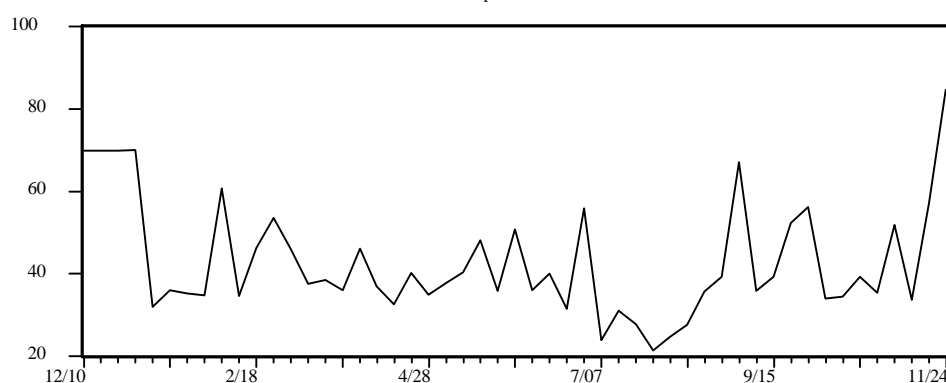
In terms of restructuring of the banking sector, even though the Bank Supervisory board has been established, measures to capture off-balance sheet risks as well as the true nature of the interest rate risk exposures have not been undertaken. Prior to the disinflation program, the Turkish banking system was relatively under capitalized with total assets totaling US\$133.5 billion (approximately 90% of GDP). By the end of 1999, the open position of the Turkish banking system stood at US\$13.2 billion, signifying the importance of arbitrage income as being the major source for the banking system. With the fall in the inflation and the rapid fall interest rates, the float income and arbitrage gains reduced significantly which were major sources of income for the Turkish banks in the past 15 years of chronic inflation. This rapid change in the macro environment proved difficult for the banking system to adapt, i.e., adjusting away from “traditional” operations towards establishing real banking relationships.

The onset of liquidity crisis seemed to stem from the seasonal factors of ‘fleeing capital’ as well as rumors of ‘bankruptcy’ of some banks that were positioned aggressively under the assumption of ever-falling interest rates. Common in the finance literature the so-called “January effect” in the international stock prices is an empirical regularity, which may be arising due to tax reasons. During the last quarter of each year, some amount of foreign capital outflow occurs from emerging markets due to incentives to U.S. investors to sell stocks before the end of the year, in order to reduce their tax liability. Normally, such an outflow is not a concern since

<sup>16</sup> Of this amount, US\$2.7 billion were due to the sale of enterprises in the portfolio of privatization agency, US\$0.3 billion were due to the transfer of operating rights of power plants, and US\$0.5 were from the first installment of the sale of the GSM license.

central banks of emerging market economies are able to sterilize the effects of this seasonal outflow through expansionary open market operations. However, Central of Turkey operated like a quasi-currency board and ruled out the possibility of unfavorable effects on the liquidity and the fragile banking system structure due to such outflows. The rise in the interest rates following the outflow at the last week of November reduced the value of government securities and increased the market risk in Turkey since certain margin calls took place, some foreign banks began to shut credit lines to some of the Turkish banks in order not to take further risks. A vicious cycle started, banks in need of short-term funding started selling government securities, reducing the price of them further and raising the interest rates. Figure 8 depicts the time path of the overnight interest rates during the stabilization program up until the crisis.

Figure 8  
Overnight Interest Rates (Dec. 9, 1999 - Nov. 24, 2000)  
Simple Annual %



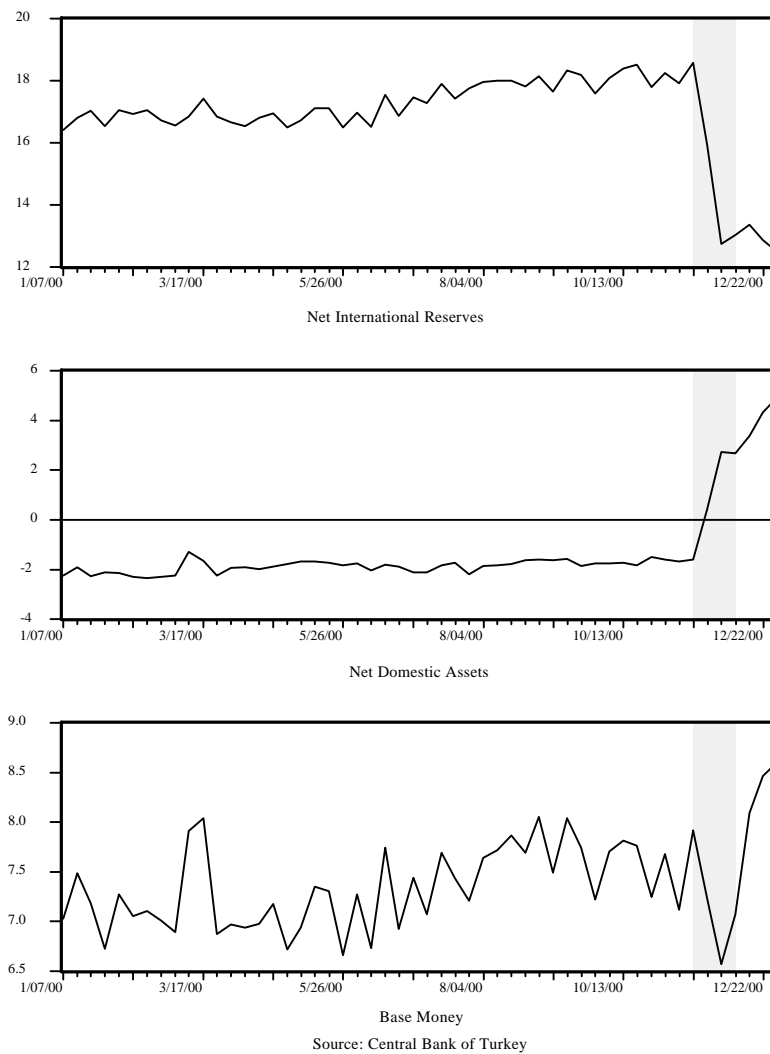
Source: Central Bank of Turkey

The reduction in value of the government securities led the foreign and domestic banks cut the credit lines to vulnerable banks since the value of their collateral decreased. The reduction in the value of Turkish government securities as well as the rise in the sovereign risk due to the increase in the vulnerability of the financial system led foreign investors to attempt to flee the market by selling their securities at fire sale prices.

The problem was exacerbated by the reversal of policy in the middle of the growing crisis on November the 30<sup>th</sup>, and led to the loss of credibility of the monetary authorities. The Central Bank of Turkey initially provided funding to the market by purchasing the government securities and lending to banks in need of short-term funding at the inter-bank market. However, the amount of liquidity injected to the market (approximately US\$ 4.3 billions) during Nov. 17 – November 30 immediately made its way to the central bank in terms of demand for foreign exchange. The process worked against the disinflation program from two fronts: the net domestic asset ceiling was exceeded and the net international reserve floor was reached. This further introduced the risk of foreign exchange and led to further capital outflow since the international investors were concerned of being hit by devaluation with the depletion of the foreign exchange reserves, which could result in a speculative attack at the remaining central

bank reserves. Domestic banks also attempted to reduce their short foreign exchange positions that further depleted the net international reserves.

Figure 9  
The Behavior of the Two Performance Criteria  
and the Base Money During 2000, US\$ Billion  
(Shaded Area: The Liquidity Crisis: Nov. 20 - Dec. 5)



Finally, on November 30, 2000, the Central Bank of Turkey announced that commercial banks will no longer be funded in the inter-bank market and this announcement pushed the overnight

interest rates to 1,700 % levels on December 1<sup>st</sup>.<sup>17</sup> Figure 9 depicts the levels of the net domestic asset, the net international reserves and the monetary base obtained from the weekly analytical balance sheet of the Central Bank of Turkey.

The liquidity crisis necessitated an intervention by the IMF on December 6, through making available Supplementary Reserve Facility (SRF) funds totaling US\$ 7.5 billion for a period of three years. However, these funds could only be used against a speculative attack at the currency (against a balance of payment crisis) and did not provide a solution to the current problem (a liquidity crunch). As a result, the decline in the interest rates was not rapid, high interest rates prevailed in the first months of 2001, eroding further the equity of the commercial banks until the second liquidity crisis, which erupted on February 2001.

In a recent paper Demirgüç et al. (2000) stress on two points. First, contemporary liquidity and banking crises are not accompanied by substantial declines in deposits. Second, the slow down in output growth following a liquidity crisis is sharp but short lived: even though output falls in the year following the crisis, it goes up to the pre-crisis levels in the second year after the crisis. However one alarming conclusion is that, even though the output rebounds fast, credit growth does not and it stays below its pre-crisis level. We expect the liquidity crisis of Turkey to have similar repercussions, contracting real activity in 2001, recovering growth in 2002 and a long-term reduction in the level of credits extended.

The next section focuses on the inherent channels in the exchange rate-based stabilization program and attempts to answer the question whether the stabilization program of 2000 “sowed the seeds of its own destruction” due to these channels.

### **3. Inherent Channels of Transmission to a Liquidity Crisis**

In this section a quest will be made to uncover the existence of certain inherent channels leading to an increase in the vulnerability of the system and to a possible liquidity crisis in the IMF-backed disinflation program. It is important to note that an increase in the vulnerability of an economy is neither a necessary nor a sufficient condition to have a crisis. External factors may also play a role. It would be a mistake to place the entire blame on the monetary authorities and the IMF for a design flaw of the program.

Three external developments took place during 2000 that could have affected the success of the stabilization program.

First, the gradual official interest rate (the federal funds rate) hikes amounting to 100 basis points (from 5.5% to 6.5%) by the Board of Governors of the Federal Reserve System, to cool the U.S. economy during 2000. This is an important international economic development because previous research by Eichengreen and Rose (1998) based on a panel data for more than one hundred developing countries from 1975 through 1992, has uncovered a large, highly-significant correlation coefficient between changes in industrial-country interest rates and banking crises in emerging markets. Eichengreen and Rose showed that industrial country interest rates rise significantly in the years preceding the onset of emerging market banking crises.

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<sup>17</sup> Actually, the central bank continued funding the market after November 30, as can be observed from the figures. The announcement increased the interest rates due to two reasons: first, it was a reversal of policy and meant a meant loss of credibility for the central bank, and second, the actual lack of liquidity in the market.

Second, the oil price hikes in 2000. Since crude oil is the most important imported input for production and consumption, oil price hikes, effects the inflation targets of the stabilization program<sup>18</sup>. Oil prices that stood at US\$ 17.8 per barrel on January 2000, increased to US\$35 and then gradually declined to US\$ 28.5 by the end of December. This exacerbated the problem of the current account deficits throughout the year.

Third and last unfavorable shock was the increase in the strength of US\$ vis-à-vis the Euro. At the beginning of the year US\$/€ stood at 1.01, the rate declined in favor of the US\$ to 0.84 and finished the year at 0.94. In Turkey, imports of intermediary inputs as well as raw materials are carried out in US\$, whereas exports to the Euro zone (54% of exports in 1999, especially to Germany, which is a very important trade partner) are carried out in Euro. This movement in the US\$/€ rate also might have resulted in a deterioration of the current account deficit<sup>19</sup>.

However, external factors were not the ‘crucial’ source of the liquidity crisis in Turkey. We claim that the design of the stabilization program bear certain elements that would lead to a vulnerability of the financial system and coupled with possible adverse external factors would lead to a liquidity crisis. We next review the inherent channels of the exchange rate stabilization programs leading to vulnerability and its collapse.

The “traditional view” due to Calvo and Vegh (1994) regarding the crisis transmission of an exchange rate-based stabilization program may be characterized by the following enumerated channel:

- 1) The monetary authority announces the reduction in the devaluation rate.
- 2) The public does not find the policy credible and expect a higher devaluation at a future date.
- 3) The demand for imported goods increases and this leads to a current account deficit. (Since it will be more costly to purchase these goods at a future date.)
- 4) The inflation rate converges to the devaluation rate only slowly. This also worsens the current account deficit since domestically produced goods will stay relatively more expensive.
- 5) Depending on the level of the reserves of the central bank, dollarization begins. The level of foreign reserves is depleted by the persistent current account deficits. The lower the level of the foreign exchange reserves, the higher the dollarization. A speculative attack starts.
- 6) The central bank is forced to exit the stabilization program based on the exchange rate anchor.

Hence the initial boom and the following recession cycle has been generated.

A story similar to above and more consistent with the disinflation program of Turkey may be laid out as follows:

- 1) The disinflation program based on the exchange rate anchor and the measures of the fiscal policy and the structural reforms are announced.

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<sup>18</sup> Kibritçioğlu (2000) estimates that a hypothetical 100 percent increase in the dollar price of imported crude-oil in Turkey will lead to a cumulative increase in the general price level of 9.4 percent within the time frame of five to six months.

<sup>19</sup> The exporters and the importers could have ‘hedged’ themselves against adverse changes in the US\$/€ parity. However, data on such transactions are not available, therefore, effects of the change in the US\$/€ on the trade balance cannot be known unquestionably.



- 2) This leads to capital inflow since for a foreign investor, at the initial equilibrium expected return of investing in Turkey can be shown to equal expected return of investing at home plus the risk premium. The risk premium is made up of two components: sovereign risk (default risk) and the exchange rate risk<sup>20</sup>. The stabilization program more or less eliminates the foreign exchange rate risk. It also reduces the default risk due to the fiscal policy measures and the promised structural reforms.
- 3) The reduction in the risk premium leads to a capital inflow that in turn leads to an increase in the liquidity and a reduction in the nominal as well as the real interest rates. This is because according to the stabilization program the Central Bank of Turkey has to operate like a quasi-currency board.
- 4) The reduction in the interest rate further reduces the sovereign risk since the government is able to borrow at a lower cost. The reduction in future interest burden results in further inflows.
- 5) This leads to interest rate undershooting its medium-term equilibrium value. The capital inflow ceases until further progress is made and further reduction in the sovereign risk takes place.
- 6) The reduction in the real interest rates leads to a consumption and investment boom prompting a higher growth rate.
- 7) Increase in the consumption and investment adversely affects the current account due to increase in the consumption of imported goods and intermediate imported inputs.
- 8) Foreign exchange reserves decrease unless corrected by further inflows and this leads to speculative attacks.
- 9) The central bank has to abandon the exchange rate anchor.

One other possible channel may be laid out as follows (the first five steps are identical to the previous transmission mechanism):

- 6) Due to seasonal or some external factors as well as “reform fatigue” or delayed stabilizations, an outflow starts, liquidity in the system is reduced, repo and the inter-bank market rates increase signifying a drop in the value of the assets in the commercial banks balance sheets.
- 7) The increase in the overnight rates lead to sales of government securities by banks who are desperately seeking funds and are not able to obtain from the inter-bank market because their credit lines are cut due to increase in vulnerability.
- 8) The prices of the government securities fall and the monetary authorities cannot intervene since there is a ceiling on the net domestic assets of the Central bank. This leads to margin calls putting upward pressure on the short-term funding needs. The vulnerability of the whole banking system increases, the inter-bank market becomes dysfunctional. A liquidity crisis occurs.
- 9) Since the banks that are financially distressed are regarded as a liability to the government budget, the sovereign risk rises.

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<sup>20</sup> Here, the existence of Turkish Eurobonds is assumed away. The only difference would be the disappearance of the exchange rate risk when Turkish Eurobonds are introduced in the picture.

- 10) Capital outflow leads to a reduction in the international reserves causing an upward pressure on the exchange rate risk, prompting a speculative attack.
- 11) The monetary authority has to abandon the exchange rate anchor.

It is quite possible that each of these three channels may be responsible for the occurrence of the crisis. However, for the case of the Turkish liquidity crisis of 2000, the latter two channels are more relevant. That is to say, in contrast to the balance of payments crises following unsuccessful exchange rate-based stabilization programs prior to 1990s, the crisis of Turkey in 2000, following the eleven-month implementation of the stabilization program, was in the form of a liquidity crunch and banking crisis. In other words, the traditional current account channels of crises are being replaced by capital accounts related channels in the 1990s. This is due to the speedy integration of the capital markets in the 1990s. The single indicator that perhaps best illustrates the dramatic expansion of international financial markets and the relative importance of capital market transactions is the volume of trading in the world's foreign exchange markets. Using the Bank for International Settlements' November 1998 survey<sup>21</sup>, in 1997, foreign exchange trading stood at US\$ 1,490 billion. By contrast, in 1997 the global volume of exports and imports was only US\$ 25 billion per trading day.

The letter of intent, by specifying the "no sterilization rule" in the financially integrated world markets, has inadvertently caused two adverse developments that led to the crisis: 1- The initial undershooting of the interest rate that led to an import boom as well as aggressive positioning of some banks by purchasing "excessive amounts" of government securities in expectations of falling interest rates; 2-The floor on the net international reserves and the ceiling on the net domestic assets coupled with the fragile banking structure led to speculations of the abandoning of the crawling peg during a seasonal capital outflow there by raising the foreign exchange risk<sup>22</sup>.

#### 4. Conclusion

The paper reviewed the main developments in Turkey in the first eleven months of the stabilization program prior and provided three channels with which the program "sowed seeds of its own destruction." An important question that demands an answer is 'could the Turkish liquidity crisis in November 2000, which led to the abandonment of the crawling peg regime at the end of February 2001, have been avoided?' Answers regarding the lack of favorable external conditions such as "had the oil prices not risen, ", "had the U.S. federal funds rate not gone up" or "had the US\$/€ parity not moved unfavorably", would be pointing out to incorrect directions since those were not under the control of the disinflation program designers.

At this point, there are three important points that need to be mentioned for achieving the success of the program:

- 1) Sustained capital inflows and international support in such a program are very important and will only be possible under sustained good news in reducing the sovereign risk such as

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<sup>21</sup> The report can be accessed in its entirety at [http://www.bis.org/publ/r\\_qt9811.pdf](http://www.bis.org/publ/r_qt9811.pdf).

<sup>22</sup> Such a speculation turned out to be self-fulfilling and eventually, the monetary authority had to abandon the crawling peg on February 2001, when the commercial banks started to collapse under drastically high overnight interest rates (on February 20, 2001, the average simple annual overnight inter-bank rate stood at 4,018.6%).

maintaining the outlined structural reforms and privatization calendar. Whether these reforms and privatization are desirable or not is a different issue. However, once they are announced in the letter of intent and the Turkish government had committed itself, there should have been no turning back. The only way to keep the sustained capital inflows is to avoid any actions that will jeopardize the credibility of the program such as deviations from the pre-announced calendar of privatization or creating uncertainties in the announced measures of the agricultural reform.

- 2) When one considers the facts that the trade deficit in the first 11-months of 2000 stood at US\$22.3 billion and the amount of capital outflow during November 20-December 15 to be in the range of US\$6.4 billion, a US\$4.0 billion stand-by agreement with the IMF spread out to three years does not provide strong insurance. The magnitude of the capital flows at the end of 1990s requires much larger magnitudes of insurance. That is why one may consider the release of Supplementary Reserve Facility (SRF) funds totaling US\$7.5 billion by the IMF on December 6, 2000, a relief that came too late. It is important to note that these SRFs do not create the problem of moral hazard since they cannot be used freely in the domestic markets. However, had these funds been made available before the crisis, say at the beginning of the signing of the letter of intent, at least the rumors of a devaluation would not be around since the net international reserve target levels would not have been approached. On the other hand, the November 2000 crisis was a liquidity crisis in nature and the SRFs couldn't have been used to ease the liquidity crunch. The persistence of the high interest rates in the first months of 2001 provided the setting for the second attack in February 2001
- 3) The "no sterilization" requirement in the monetary and exchange rate policy as laid out in the letter of intent, is a controversial one. As mentioned above, the interest rate undershooting was the primary reason of the drastic increase in the current account deficit and the vulnerability of the banking system. These two adverse developments came as a result of the real return to savings and government securities and increased the maturity mismatch risk. Had "some portion" of the initial capital inflow been sterilized, so that the fall in the interest would not have been so abrupt, the liquidity crisis due to undershooting of the interest rate could have been avoided.

The answer to the question "Had there be no clause on the disinflation program regarding no sterilization, would the Central Bank of Turkey have sterilized these flows?" is not necessarily affirmative. There were two reasons why the monetary authority would be reluctant to 'sterilize': 1- The Turkish economy was coming out of a recession, and needed the increase in the real activity. The increase in consumption and investment was achieved through the reduction in the real interest rates (since the prices were by definition sticky). Of course, the costs that will be paid in terms of output loss in 2001 may unfortunately overwhelm such short-term benefits. 2- An important reason why the stabilization program was eventually undertaken was the increasing share of interest payments on the outstanding government debt. The lower the interest rate went, the lower will be the future interest burden on the Turkish budget, thus the monetary authority was unwilling to sterilize the inflows. Of course the costs of this strategy was also higher interest rates prevailing on newly government securities in 2001 that will endanger the fiscal targets of 2002.

To conclude, the three important 'internal' factors that could have caused the liquidity crisis in 2000 could be summarized as follows: 1- The unsuccessful government policies in maintaining the stream of good news on structural reforms as laid out in the letter of intent and in sustaining capital inflows; 2- Not enough backing of the program by the IMF in terms of providing enough insurance for eliminating the exchange rate risk completely; 3- The 'no sterilization' rule as stated in the letter of intent that resulted in the initial interest rate undershooting and the later liquidity crunch. These factors coupled with the fragile banking system structure and unfavorable external conditions seem to have contributed to the crisis.

## References

- Alesina, A. and A. Drazen (1991). Why Are Stabilizations Delayed? *American Economic Review*, 81: 1170-1188.
- Alper, E. and I. Sađlam (2001). The Transmission Mechanism of A Sudden Capital Outflow: Evidence from Turkey. *Eastern European Economics*, Vol. 39 No. 2, 29-48.
- Alper, E., H. Berüment and K. Malatyalý (2001). The Impact of the Disinflation Program on the Structure of the Turkish Banking Sector. *Russian and East European Finance and Trade*, Vol. 37, No. 6, pp. 72-84.
- Calvo, G. (1998). Capital Flows and Capital Market Crises: The Simple Economics of Sudden Stops. *Journal of Applied Economics*, 1/1: 35-54.
- Calvo, G. and C. Vegh (1997). Inflation Stabilization and BOP Crises in Developing Countries. In: *Handbook of Macroeconomics*, edited by J. Taylor and M. Woodford, Amsterdam: North-Holland.
- Corsetti, G., P. Pesenti and N. Roubini (1998). What Caused the Asian Currency and Financial Crisis? Available at: <http://www.stern.nyu.edu/globalmacro/AsianCrisis.pdf>
- Demirgüç, A., E. Detragiache, and P. Gupta (2000). Inside the Crisis: An Empirical Analysis of Banking Systems in Distress. IMF Working Paper No. 156.
- Dornbusch, R. (1998). After Asia: New Directions for the International Financial System. Mimeo, available at: <http://web.mit.edu/rudi/www/PDFs/aftera%7E1.pdf>.
- Eichengreen, B. and A. Rose (1998). Staying Afloat When the Wind Shifts: External Factors and Emerging Market Banking Crises. NBER Working Paper No. 6370.
- Hanke, S. H. (2000). How to Forestall International Rescue: Currency Boards in Turkey and Argentina Could Have Saved the IMF from Having to Bail Them Out Again. *Financial Times*, December 12, 2000, available at: <http://globalarchive.ft.com/globalarchive/articles.html?id=001212001984>.
- Kaminsky, G. and C. Reinhart (1998). On Crises, Contagion, and Confusion. Forthcoming in: *Journal of International Economics* and available at: <http://gwu.edu/~graciela/HOME-PAGE/RESEARCH-WORK/WORKING-PAPERS/contagion.pdf>.
- Kibritçiođlu, A. (2000). World Crude-Oil Price Increases and the Success of the Disinflation Program in Turkey (in Turkish). *PetroGas Dergisi* No. 16.
- Paldam, M. (1994). The Political Economy of Stopping High Inflation. *European Journal of Political Economy*, 10: 135-168.
- Vegh, C. (1992). Stopping High Inflation: An Analytical Overview. *IMF Staff Papers*, 39/3.